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Amit Nandan Mishra
Associate professor, Department of Orthopedics, Era's Medical College, Lucknow, Uttar Pradesh, India

Dr. Shakeel Ahmad Qidwai
Associate professor, Department of Community Medicine, Mayo Institute of Medical Sciences, Lucknow, Uttar Pradesh, India

Sandhya Mishra
Professor, Department of Orthopedics, Era's Medical College, Lucknow, Uttar Pradesh, India

Correspondence
Sandhya Mishra
Professor, Department of Orthopedics, Era's Medical College, Lucknow, Uttar Pradesh, India

Pattern of injuries in road traffic accident in northern Indian population

Amit Nandan Mishra, Dr. Shakeel Ahmad Qidwai and Sandhya Mishra

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Abstract
Road Traffic Accident (RTA) is a current global development epidemic. The World Health Organization (WHO 2010: 5) estimates that road traffic crashes cause over 1.24 million deaths and about 50 million people are injured per year. In India, the problem of road traffic accidents has been a public health issue. The present study aims to study the clinical profile of road traffic accident victims with orthopedic injuries admitted in a hospital of Lucknow, Uttar Pradesh. The present cross-sectional study has been carried out at Orthopedics OPD and Emergency at Era's Medical College, Lucknow. Sample size was calculated prior and was 262. The data were collected from Sep 2014 to June 2015. The findings were presented in tabular form to assess the socioeconomic variables, types of orthopedic injuries and most reasons of accidents. It is found that 69% victims were in age group of 20–40 years. Out of 262 patients 69% were male while 31% were female. Nearly 35% were undergraduate students. In 30% patients, tibia was fractured while in nearly 18% patients, two bones were fractured in combination of tibia+pelvis/femur/fibula/skull/ribs/humerus/radius/ulna. The distribution of patients according to bone fracture patterns was same among three bone fractures. The percentage of patients having four bone fracture (tibia+pelvis+humerus+ulna) was found to be 1%. In the present study, 39% accident victims reported that they got accident due to high speed of vehicle, 27% reported that accident occurred due to poor traffic systems, 31% reported that it happened due to poor road while 4% presented the reason of accident due to other reasons. The present study aims to know the common pattern of orthopedic injuries after road traffic accidents. The middle-age people are victims of traffic road accidents who get various types of typical orthopedic injuries. Still, the high speed and poor traffic systems are twin problems of road accidents.

Keywords: Road Traffic Accident, World Health Organization, Public Health Issue

Introduction
According to the World Health Organization (WHO), number of deaths due to road traffic accidents are estimated 1.24 million worldwide in the year 2010, which is found to be slightly down from 1.26 million in 2000 [1]. It is approximately one person is killed every 25 sec. According to the Global Status Report on Road Safety 2013, 231,000 road accident victims are killed in road traffic crashes in India every year [1]. Approximately 50% of all deaths on the country's roads are among vulnerable road users - motorcycle riders, pedestrians and cyclists. There are many reasons of accidents identified but a heterogeneous traffic mix which includes very-high-speed vehicles sharing the road space with vulnerable road users as well as bad road infrastructure and vehicles that are in bad condition all contribute to the high fatality rates seen on India's roads and significant reason of accidents [1]. Road safety and transportation experts in India warn that the actual number of fatalities could be much higher because many cases are not even reported. There is no scientific estimate as to how many people injured in road traffic accidents die a few hours or days after the accident. Over a third of road traffic deaths in low- and middle-income countries are among pedestrians and cyclists. However, less than 35% of low- and middle-income countries have policies in place to protect these road users. Despite strong laws and regulations, India has been unable to prevent the growing number of accidents on its roads. India has overtaken China with around 105,000 deaths annually. Head injuries are the most common and serious type of trauma of the road traffic accidents [2-7].

Materials and Methods

The present observational study was undertaken at Era Medical College, Lucknow, from September 2014 to June 2015 at the Department of Orthopedics & Emergency. A total of 262 road accident victims participated in the present study. All the road accident victims coming at OPD & Emergency were included as per the following inclusion / exclusion criteria.

Inclusion Criteria

1. All victims aged more than 10 years were included in the study.
2. All accident victims who were conscious and medically fit to participate.
3. Those who were interested to participate in the study were included.

Exclusion Criteria

1. All accident victims of age group less than 10 years.
2. Those who were unconscious but cannot speak and answer.
3. Those who were not interested to participate in the study were excluded.

After the screening of eligible subjects for the study, an open self-administrated questionnaire was used to collect the needful information for the study. The minimum sample size required for the present study was estimated by a statistician by using appropriate formula based on proportion. After the collection of data, it was analyzed in SPSS of version 21.0 (IBM Chicago). The frequency and proportion were calculated to study the various variables under study.

Results

The findings are presented in Tables 1 to 3 to assess the socioeconomic variables, types of orthopedic injuries and most reasons of accidents. It is found from Table 1 that 18% victims were in age group of 10-20. The 37% majority victims were in the age group of 20-30. The percentage of victims of age group 30-40 was 32%. It is also found that 12% victims were 40 and above age group. Out of 262 patients, 69% were male while 31% were female. Previous studies show that educational status also plays important role in prevention of accidents. It was clear from Table 1 that 26% of victims were illiterate while maximum 35% were undergraduate who reported the reason of accidents was high speed and due to violation of traffic rules.

In 30% of patients, tibia was fractured. After clinical assessment, it was found that in 9% accident victims, fibula was fractured. In nearly 18% patients, two bones were fractured in combination of tibia + pelvis / femur / fibula / skull/ribs/humerus/radius/ulna. The distribution of patients according to bone fracture patterns was same among three bone fractures. The percentage of patients having four bones fracture (tibia + pelvis + humerus + ulna) was found to be 1%. The other types of one bone, two bones, three bones fractured are represented in Table 2.

In the present study, 39% accident victims reported that they got accident due to high speed of vehicle, 27% reported that accident occurred due to poor traffic systems, 31% reported that it happened due to poor road while 4% presented the reason of accident due to other reasons which are represent in Table 3.

Discussion

Solagberu *et al*. [8] has reported 62.3% prevalence of RTA in a study conducted in Nigeria related to traffic road accidents. Another study conducted in India by Gururaj in 2004 found that RTA was responsible for 52% of injuries [9]. In the study by Huda, the commonest mode of injury was roadside accident seen in 48.13% cases [10], followed by fall in 29.5%, assault in 5.4%, occupational injuries 10.5%, sports related in 4.17% and firearms in 2.08%. This study was motivated by Kaur *et al*. [11] Results in the present study show same results as obtained in Kaur *et al*. to all types of distribution of bone fractures.

Table 1: Distribution of study subjects according to Socioeconomic Variables.

Age group	n	%
10–20	47	18
20–30	98	37
30–40	85	32
40 and above	32	12
Gender		
Male	180	69
Female	82	31
Religion		
Hindu	170	65
Muslim	54	21
Sikh	32	12
Christian	6	2
Educational qualification		
Illiterate	67	26
High school	54	21
Undergraduate	91	35
PG and Above	50	19

Table 2: Distribution of study subjects according to types of Bone fracture.

Types of fracture	n	%
One Bone		
Tibia	79	30
Fibula	24	9
Pelvis	18	7
Humerus	8	3
Ulna	5	2
Spine	5	2
Radius	3	1
Clavicle	3	1
Two bones		
Tibia+pelvis/femur/fibula/skull/ribs/humerus/radius/ulna	47	18
Fibula+femur/knee/pelvis/skull/radius/ulna	16	6
Femur+knee/skull/radius/ulna/clavicle	8	3
Pelvis+knee/skull/ribs/humerus/clavicle	5	2
Skull+humerus/ulna	5	2
Three bones		
Tibia+pelvis+skull/ribs/radius/ulna	5	2
Tibia+humerus+ulna/clavicle/skull	5	2
Tibia+fibula+humerus	5	2
Fibula+femur+humerus/radius	5	2
Tibia+femur+clavicle	5	2
Femur+skull+humerus	3	1
Femur+ulna+pelvis	3	1
Spine+humerus+ulna	3	1
Four bones		
Tibia+pelvis+humerus+ulna/	3	1

Table 3: Distribution of Responses Regarding Reason of Accidents

Reason of accident	n	%
High Speed	101	39
Poor traffic System	70	27
Poor road	80	31
Other reason	11	4

Conclusions

The present study aims to know the common pattern of orthopedic injuries after road traffic accidents. The middle-age people are victims of traffic road accidents who get various types of typical orthopedic injuries. Still the high speed and poor traffic systems are twin problems of road accidents in India.

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